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Reply to Office Action of April 15, 2003

REMARKS/ARGUMENTS

A petition to extend the period of time for responding to the Office Action by one month is enclosed herewith.

Claim 45 has been amended. Claims 23 - 45 are pending in this application.

In the Office Action, claims 23 - 28 and 30 - 44 stand rejected under 35 U.S.C. 103(a) as being unpatentable over JP 64-052238 to Shinobu in view of U.S. Patent No. 3,892,415 to Takahashi et al. Additionally, in the Office Action, claim 29 stands rejected under 35 U.S.C. 103(a) as being unpatentable over JP 64-052238 to Shinobu in view of U.S. Patent No. 3,892,415 to Takahashi et al as applied to claim 23 and further in view of US Patent No. 6,179,031 to Rack et al. Furthermore, in the Office Action, claim 29 stands rejected under 35 U.S.C. 103(a) as being unpatentable over JP 64-052238 to Shinobu in view of US Patent No. 2,705,968 to Mazzeo.

Applicants thank the Examiner for the opportunity to discuss the present application on July 12, 2004. During that discussion, the cited references JP 64-052238 to Shinobu, U.S. Patent No. 3,892,415 to Takahashi et al, and US Patent No. 2,705,968 to Mazzeo were discussed. Also, it was agreed that Applicants would submit the current Amendment to amend claim 45 in the manner discussed to more emphatically recite the relationship of the downward sliding movement of the substrates along the noses and the inward radial movement of the noses.

With respect to the rejection of claims 23 - 44 under 35 U.S.C. 103(a), Applicants request favorable reconsideration in view of the following comments.

Claim 23 of the present application recites an apparatus for joining together at

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least two substrates, each of which has an inner hole. The apparatus includes a pin that is adapted to the inner holes of the substrates, wherein the pin is provided with at least two noses that are movable radially relative to the pin. Moreover, the noses have linear outer surfaces upon which edges of the inner holes of the substrates can glide downwardly during movement of the noses toward the pin.

The inventive apparatus advantageously ensures that each of the substrates to be bonded together moves downwardly into the bonding position with the substrate in a centered disposition relative to the pin.

Shinobu discloses a substrate bonding arrangement whereby a first substrate is guided along a guide shaft 11 and is received on a projecting part of a leaf spring 12. A pushing shaft 17 is then lowered and the leaf spring 12 is deflected toward the center of the guide shaft 11, whereupon the lower substrate 1 drops onto a step part of the guide shaft 11. The pushing shaft 17 is then released to move upwardly and an adhesive agent 3 is applied onto the lower substrate 1 in preparation for the adhesive securement of the lower substrate 1 with an upper substrate 2 which is applied downwardly over the guide shaft 11 in the same manner as the lower substrate 1 was applied.

Takahashi et al '415 discloses a record changer having upper claws 95 and lower claws 87 both movably mounted in a spindle 83. As described in column 8, lines 53-67 of Takahashi et al '415, in connection with the placement of one or more records to be played onto the spindle 83, the shaft 85 of the spindle 83 is moved upwardly and the upper claws 95 are drawn into the spindle 83 in a closed state because the upper claw holder 94 is raised against the resilience of a spring 98, as shown in Figure 8 of

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Takahashi et al '415. With the upper claws 95 in their closed position in which they are fully radially inwardly retracted into the spindle 83, the records to be played are lowered along the spindle 83 until the lowermost record is engaged by the lower claws 87, which are in their open radially outwardly extended position relative to the spindle 83, and the lower claws 87 thereafter support the single record or the stack of records. Thereafter, as described in column 9, lines 64 – column 10, line 8 of Takahashi et al '415, when a record is to be reproduced automatically, upon depressing the reproduction start button B3, the shaft 85 of the spindle 83 is brought down under the weight of the records and the upper claws 95 are pushed out of the window 84c in the outer sheath of the spindle 83 because the upper claw holder 94 is pushed down by the spring 98, thereby forcing the upper claws 95 outwardly along the conical cam 93. Thus, the records heretofore supported by the lower claws 87 are now supported by the upper claws 95, except for the lowermost record that is still supported by the lower claws 87. At a later step of this record-loading cycle, the respective lowermost record supported on the lower claws 87, in response to the retraction of the lower claws 87 into the sheath 84 of spindle 83, slides downwardly along the spindle 83 to come to rest on the turntable 2. Successive records to be played are thereafter ultimately dropped onto the previously played records supported on the turntable 2 by a record-dropping process in which each successive record is: (1) individually released to slide downwardly onto the opened lower claws 87 via radially inward movement of the upper claws 95 into closed positions in the spindle 83 and (2) released from its supported position of the opened lower claws 87 by radial inward movement of the lower claws 87 into retracted positions in the

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spindle 83.

In the Office Action, it is asserted that Shinobu discloses an apparatus for bonding two substrates but it is noted, however, that Shinobu does not disclose noses having linear outer surfaces the edges of which engage the inner holes of the substrates during movement of the noses toward the pin. Nonetheless, the Office Action asserts, one in the art would appreciate providing any mechanism which would allow the substrate to be supported until release and which includes any other surface configuration such as a curved surface or a linear outer surface for the noses to allow any substrate to glide downwardly during movement of the noses. Moreover, the Office Action asserts, such a mechanism is well known and conventional as is shown, for example, by Takahashi et al '415. Thus, the Office Action asserts it would have been obvious to one skilled in the art at the time the invention was made to provide a mechanism with a linear outer surface for the noses as disclosed by Takahashi et al '415 in the apparatus of Shinobu to thereby provide a simple and inexpensive mechanism to easily position the substrates properly without damaging the substrates.

Applicants respectfully submit that the present invention is neither taught nor disclosed by Shinobu or Takahashi et al '415 alone or in combination. As noted, Shinobu provides a deflectable leaf spring 12 that is deflected by the operation of a pushing mechanism 17. Thus, Shinobu does not teach any mechanism that controls the movement of a substrate downwardly along a pin or a shaft, let alone teaching radially moveable noses, such as recited in claim 23 of the present application, having linear outer surfaces upon which the edges of the inner holes of the substrate can glide

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downwardly during movement of the noses toward the pin.

With respect to the Takahashi et al '415 record changer, it can be clearly seen that Takahashi et al '415 does not contemplate or even hint at the desirability of a moveable nose-type structure having linear outer surfaces upon which the edges of the inner holes of the substrate can glide downwardly during movement of the noses toward a pin. Instead, Takahashi et al '415 discloses upper claws 95 that are fully retracted into the spindle 83 to permit the records supported on the upper claws 95 to drop downwardly along the spindle 83 (until the lowermost records is engaged by the opened lower claws 87). Thus, contrary to the assertion in the Office Action, Takahashi et al '415 does not in fact teach or disclose any nose-type structure having linear outer surfaces upon which the edges of the inner holes of the substrate (i.e., a "record") can glide downwardly during movement of the noses toward a pin.

The specification of Takahashi et al '415 provides no disclosure of the configuration of the outer surfaces of the upper claws 95 of the Takahashi et al '415 arrangement. Furthermore, it can be seen in Figure 8 of Takahashi et al '415 that the lowermost end of each of the upper claws 95 of the Takahashi et al '415 arrangement is configured as a radially outwardly extending projection. These radially outwardly extending projections presumably facilitate the engagement by the upper claws 95 of the Takahashi et al '415 arrangement of the next-to-the lowermost record during the automatic record reproduction operation in which the upper claws 95 are pushed out of the window 84c in the outer sheath of the spindle 83 to thereafter support the records heretofore supported by the lower claws 87. If, on the other hand, the upper claws 95

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of the Takahashi et al '415 arrangement were provided with linear outer surfaces in lieu of the radially outwardly extending projections, the engagement and subsequent support of the next-to-the lowermost record and the other records stacked thereon by the upper claws 95 of the Takahashi et al '415 arrangement would rely entirely upon the outward radial force applied by such linear outer surfaces against the inner holes of the next-to-the lowermost record and the other records stacked thereon. In other words, the portion of the next-to-the lowermost record forming the inner hole of the record would no longer rest on any projecting structure of the upper claws 95 of the Takahashi et al '415 arrangement as any such linear outer surfaces would have no projecting structure. It can be seen that a design of the upper claws 95 of the Takahashi et al '415 arrangement with linear outer surfaces would thus be less effective than the radially outwardly extending projections shown in Figure 8 of Takahashi et al '415 in reliably engaging and supporting the next-to-the lowermost record and the other records stacked thereon. Accordingly, in view of the absence of any disclosure in Takahashi et al '415 of a linear outer surface on the upper claws 95 of the Takahashi et al '415 arrangement and the fact that such a linear outer surface configuration would undermine the advantages of the disclosed radially outwardly extending projections of the upper claws 95 of the Takahashi et al '415 arrangement in supporting the stacked records, it is submitted that one of skill in the art would find no hint or motivation from Takahashi et al '415 to provide a nose-type structure having linear outer surfaces.

Moreover, even if the upper claws 95 of the Takahashi et al '415 arrangement were to be provided with linear outer surfaces, such linear outer surfaces would not

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even provide any structure along which the inner hole of a record would slide, for the reason that the upper claws 95 are fully retracted into the spindle 83 during each record-dropping operation. Simply put, the outer surface configurations of the upper claws 95 of the Takahashi et al '415 arrangement do not serve any record-guiding function and can thus be configured of any selected geometry, insofar as the full retraction of the upper claws 95 of the Takahashi et al '415 arrangement will ensure that the outer surfaces of the upper claws 95 will not interfere with the dropping of the records downwardly along the spindle 83.

Accordingly, since neither Shinobu nor Takahashi et al '415 disclose a moveable nose-type structure having linear outer surfaces upon which the edges of the inner holes of a substrate can glide downwardly during movement of the noses toward a pin, as recited in claim 23 of the present application, neither reference provides any motivation for one of skill in the art to selectively combine the respective structures disclosed in Shinobu and Takahashi et al '415 with one another.

Moreover, even if there were some motivation for one of skill in the art to combine Shinobu and Takahashi et al '415 with one another in the manner suggested in the Office Action, which Applicants submit there is not, neither Shinobu nor Takahashi et al '415 provide any guidance to one of skill in the art as to how the respective different structures of the two references can be combined with one another. Since Shinobu already has its own mechanism - mainly, the pushing shaft 17 and the leaf spring 12 arrangement - for permitting the downward movement of a substrate past a pre-determined location on a shaft, and since Takahashi et al '415 has its own

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arrangement - namely, the upper claw holder 94 for moving the upper claws 95 inwardly into the spindle 83 to permit the passage therepast of a stack of records, there would be no motivation for one of skill in the art to selectively substitute one of these mechanisms for the other of these mechanisms.

Furthermore, even if one of skill in the art were provided with such motivation to substitute one mechanism for the other, the resulting combination would still not operate in the same manner as the substrate arrangement recited in claim 23 of the present application. For example, the substitution of the mechanism of Takahashi et al '415 into the arrangement of Shinobu, as suggested by the Office Action, would still not result in a structure in which a moveable nose-type structure having linear outer surfaces upon which the edges of the inner holes of the substrate can glide downwardly during movement of the noses toward a pin, as is recited in claim 23 of the present application.

As noted, the inner holes of the records previously supported by the upper claws 95 of the Takahashi et al '415 arrangement do not glide along the outer surfaces of these upper claws 95 for the reason that these upper claws 95 are fully retracted into the spindle 83 during a record-dropping operation. Additionally, it would still be of no avail to substitute the mechanism of either Shinobu or Takahashi et al '415 into the other's respective arrangement, as neither of these mechanisms provide the advantage of the inventive apparatus recited in claim 23 of the present application - namely, neither of these prior art mechanisms ensures the centered disposition of a substrate as the substrate is moved downwardly along the length of a pin or a shaft.

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Accordingly, it is submitted that the substrate arrangement recited in claim 23 of the present application is neither taught nor disclosed by Shinobu or Takahashi et al '415, alone or in combination with one another. Additionally, it is submitted that the other cited references do not overcome the deficiencies of by Shinobu or Takahashi et al '415 and that claims 24 - 44 ultimately depending from claim 23 of the present application are allowable for at least the reasons that claim 23 is allowable.

With respect to the rejection of claim 29 under 35 U.S.C. 103(a) as being unpatentable over JP 64-052238 to Shinobu in view of U.S. Patent No. 3,892,415 to Takahashi et al as applied to claim 23 and further in view of US Patent No. 6,179,031 to Rack et al, Applicants submit that US Patent No. 6,179,031 to Rack et al fails to overcome the deficiencies noted with respect to the combination of JP 64-052238 to Shinobu and U.S. Patent No. 3,892,415 to Takahashi et al for at least the reason that US Patent No. 6,179,031 to Rack does not provide any hint or motivation for one of ordinary skill in the art to combine these prior art references with one another as asserted in the Office Action.

With respect now to the rejection of claim 45 under 35 U.S.C. 103(a), Applicants request favorable reconsideration in view of the amendment of claim 45 and the following comments.

Claim 45 of the present application as currently amended recites an apparatus for joining together at least two substrates, each of which has an inner hole. The apparatus includes a pin having an outer diameter less than the inner holes of the substrates such that each of the substrates can freely pass over the pin upon insertion

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of the substrate onto the pin. Also, the apparatus recited in independent claim 45 includes at least two noses, each nose being movable relative to the pin and having an outer surface for sliding engagement therealong of an inner hole edge location of a respective one of the substrates being inserted over the pin. Each nose moves radially inwardly as it yieldably resists the downward sliding movement of the respective engaged inner hole edge location of said respective one substrate as said respective one substrate is being inserted over said pin, wherein the downward sliding movement of said respective one substrate along said noses is controlled by the inward movement of said noses relative to said pin. Moreover, the yielding resistance of each of the noses relative to the other of the noses is such that the respective one substrate remains substantially centered on the pin as the respective one substrate slides along the noses and the axial lower limits of the outer surfaces of the noses are axially above a lower extent of the pin having a length sufficient for the respective one of the substrates to move downwardly beyond the noses into a position on top of an already fully inserted substrate disposed therebelow. The apparatus recited in independent claim 45 additionally includes means for biasing the noses radially outwardly from the pin such that the noses immediately engage the respective one substrate as the one respective substrate moves downwardly along the pin.

In the Office Action, it is asserted that Shinobu discloses an apparatus for bonding two substrates but notes, however, that Shinobu does not disclose noses having linear outer surfaces such that the edges of the inner holes of the substrates can glide downward during movement of the noses toward the pin. Nonetheless, the Office

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Action asserts, one in the art would appreciate providing any mechanism which would allow the noses to move toward the pin or shaft to allow a substrate to glide downwardly and that such mechanism is well known and conventional as is shown, for example, by Mazzeo '968.

As noted above, Shinobu discloses a substrate bonding arrangement whereby a first substrate is guided along a guide shaft 11 and is received on a projecting part of a leaf spring 12.

Mazzeo '968 discloses an umbrella having a lock spring mechanism for allowing a sleeve to move along the umbrella shaft.

Applicants respectfully submit that the present invention is neither taught nor disclosed by Shinobu or Mazzeo '968 alone or in combination. As noted, Shinobu provides a deflectable leaf spring 12 that is deflected by the operation of a pushing mechanism 17. Thus, Shinobu does not teach any mechanism that controls the movement of a substrate downwardly along a pin or a shaft, let alone teaching a radially moveable nose, such as recited in claim 45 of the present application, whose radially inward movement controls the downward sliding movement of the substrate as the substrate glides along the noses.

With respect to Mazzeo '968, neither this reference nor any other prior art of record provides one of ordinary skill in the art with any hint of the desirability of selectively placing the Mazzeo '968 umbrella mechanism into the Shinobu arrangement.

Moreover, even if there were some motivation for one of skill in the art to combine Shinobu and Mazzeo '968 with one another in the manner suggested in the Office

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Action, which Applicants submit there is not, neither Shinobu nor Mazzeo '968 provide any guidance to one of skill in the art as to how the respective different structures of the two references can be combined with one another. Since Shinobu already has its own mechanism - mainly, the pushing shaft 17 and the leaf spring 12 arrangement - for releasing a substrate to slide down a shaft, and since Mazzeo '968 has its own mechanism - namely, the lock spring mechanism - for permitting the sleeve to slide along the umbrella shaft, there would be no motivation for one of skill in the art to selectively substitute one of these mechanisms for the other of these mechanisms.

Accordingly, it is submitted that the substrate arrangement recited in claim 45 of the present application as currently amended is neither taught nor disclosed by Shinobu or Mazzeo '968, alone or in combination with one another. Additionally, it is submitted that the other cited references do not overcome the deficiencies of Shinobu or Mazzeo '968.

Applicants respectfully submit that claim 24 - 45 are patentable over the cited references and request withdrawal of the rejections under 35 U.S.C. 103 and reconsideration of the application for the reasons set forth above.

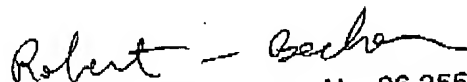
In light of the foregoing arguments in support of patentability, Applicants respectfully submit that this application now stands in condition for allowance. Action to this end is courteously solicited.

Should the Examiner have any further comments or suggestions, the undersigned would very much welcome a telephone call in order to discuss appropriate

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claim language that will place the application into condition for allowance.

Respectfully Submitted,



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